

SOIL SURVEY OF SALINE COUNTY, MISSOURI.

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LOCATION AND BOUNDARIES OF THE AREA.

Saline County is located in the west-central part of Missouri, in a broad northward bend of the Missouri River, about two-thirds of the way from St. Louis to Kansas City. Pettis County forms its entire southern boundary and Lafayette County the western, while Cooper County lies on the southeast. The Missouri River forms the northern boundary and also the eastern for a distance of nearly 75 miles, and separates Saline from Carroll, Chariton, and Howard counties.

The county lies between $38^{\circ} 52'$ and $39^{\circ} 20'$ north latitude and $15^{\circ} 55'$ and $16^{\circ} 30'$ west longitude from Washington. The greatest distance across the county from north to south is 31 miles, and from east to west, 33 miles, and the area covered is about 748 square miles, or 478,656 acres.

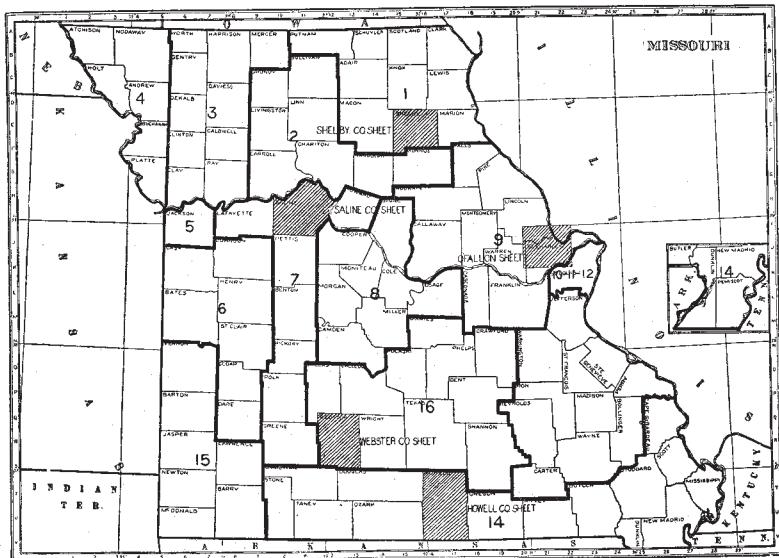


FIG. 33.—Sketch map showing location of the Saline County area, Missouri.

The base map used was made up of United States Geological Survey sheets, revised as to roads and some other minor details by the party in the field.

HISTORY OF SETTLEMENT AND AGRICULTURAL DEVELOPMENT.

The first authentic record of the presence of white men in that part of Missouri now included in Saline County dates from 1806, when the Lewis and Clark expedition passed through the country on their return from exploring the source of the Missouri River. In 1807 Capt. George Sibley established a trading post on the river where Arrowrock now stands, which was maintained until the breaking out of the war of 1812, when it was abandoned. The first real settlement was made in 1810 by Jesse Cox, a Kentuckian by birth, on the bottoms above Arrowrock. The following year he moved his family to his newly built cabin, being accompanied by his son-in-law, William Gregg. They were joined in 1813 by Frank and William Cooper. During the war of 1812 the Indians were numerous and annoying, and Christmas week, 1814, the settlement was attacked and Gregg killed. Cox then went to the fort across the river with his family, where they remained until the close of the war, when they again returned to their home west of the river. No other settlements were attempted until June, 1816, when Daniel Thornton and Isaac and William Clark, of Tennessee, moved to Cox's bottoms with their families. Thornton was a native of North Carolina. In November of the same year five other families joined the settlement. By 1820 several hundred people had come, mostly from Kentucky, Tennessee, Virginia, and Indiana, and lived in settlements for protection against the troublesome Indians. At a later date a number of Germans located in the county, and their descendants now constitute a considerable proportion of the population of the county.

Saline County was formed from a part of Cooper County, and organized by an act of the first State legislature, approved November 25, 1820, taking its name from the numerous salt springs within its borders. It then contained a much larger area than at present. In 1825 the legislature established the present boundaries. The act of organization fixed the county seat at Jefferson, where it remained until 1831, when it was removed to Jonesboro, now Napton, where it remained for eight years. It was then located temporarily at Arrowrock for about two years, and when the courthouse at Marshall was completed that town became the permanent county seat, the name of the town being in honor of John Marshall, Chief Justice of the United States. The first census of the county, taken in 1821, showed a population of 1,176.

The earliest settlers subsisted largely by hunting, and depended but little on the outside world, even for clothing; enough corn and vegetables being grown for their own use. An orchard was planted in 1817 with seed brought by one of the early settlers from Tennessee. A notable event in the agricultural development of the county occurred during the season of 1819. Two settlers experimented by

planting 3 pecks of wheat on the open prairie, and a yield of 20 bushels demonstrated, contrary to the belief of the settlers, that the unwooded plains would produce as good crops as the timbered strips along the streams. It is a singular fact that the early settlers always located on the timbered land instead of on the rich prairie, which covered about 80 per cent of the county.

The first export from the county consisted of a quantity of bacon, which was floated down the river in the fall of 1820. About this time steamboats began to make regular trips up and down the river and the exportation of farm products steadily increased. By 1824 farms had become quite numerous, and thriving towns had sprung up on the river which had frequent communication by steamer with St. Louis. The advantages afforded by a water route to the East made possible the early and rapid development of this rich region, so that by 1840, nearly forty years before railroad connections were established, it had become quite thickly settled. The early settlers found the prairie and valley grasses growing in great luxuriance. Until 1840 these wild grasses, used for grazing, were one of the principal resources, and even much later they were used to a considerable extent for both hay and pasturage. Finally they were entirely superseded by the domestic varieties, as timothy was found to excel and red clover to do as well as in the Eastern States. Up to about 1870 the success of bluegrass on the prairie was doubted, but later it became the leading pasture grass and is now as common as its companion, white clover.

The acreage in corn has at all times been much larger than that of any other crop, and from 1840 to 1850 it was about four times that given to wheat, which was second in importance. During this decade the production of these two crops and of oats and hay doubled, as did also the number of cattle and sheep raised, while the number of swine raised increased twelvefold. Thousands of tons of hemp were grown annually from 1850 to 1860 and even later, but the importation of jute and other foreign fibers made this industry unprofitable. The increase in the production of corn exceeded that of all other crops, and by 1860 it was by far the most important article of export.

The civil war, together with the changed conditions resulting therefrom, acted as a severe check to the prosperity of the farmers and to the county generally. However, by 1870 the value of farm products greatly exceeded that of 1860. This phenomenal development following the civil war is remarkable, when it is considered that no railroad transportation was afforded for the products, except in the extreme southwestern corner of the county, until 1878, when the Chicago and Alton Railway was completed to Marshall. A few years earlier a branch of the Missouri Pacific Railway was built from Sedalia

to Lexington, touching the county at Sweetsprings. This was followed in 1887 by the building of the river route of the Missouri Pacific through the county. During the decade from 1860 to 1870 wheat had gained most rapidly, its acreage becoming more than half that of corn. This increased production of wheat continued about twenty years, when its low price and the increasing price of corn and beef turned the farmers' attention more strongly than ever before to these industries, to which the soils, climate, and transportation facilities of the county are so well adapted.

CLIMATE.

The following table, compiled from the records of the Weather Bureau, gives the normal monthly and annual temperature and precipitation for Marshall and Miami. The figures for the former place are computed from records for the last fourteen years, while those for Miami cover twenty years for temperature and fifty-five years for precipitation.

It will be seen that the greatest rainfall occurs during the growing season—May, June, and July—and that ordinarily it is sufficient, but not excessive, during the harvesting period.

The winters are not particularly severe, although extremely cold weather is not uncommon, temperatures of zero and below being often reached. The summers are generally equable, and when high temperatures are reached the heat is almost always tempered by the prairie breezes.

For the season of 1903, the last killing frost in spring occurred May 1, and the first in the fall on October 18. These dates probably represent fairly well the length of the growing season, 170 days, in which immunity from frost may be expected. This gives ample time for the growing and maturing of all the staple crops grown in the county.

Normal monthly and annual temperature and precipitation.

Month.	Miami.		Marshall.		Month.	Miami.		Marshall.	
	Tempera-ture.	Precipi-tation.	Tempera-ture.	Precipi-tation.		Tempera-ture.	Precipi-tation.	Tempera-ture.	Precipi-tation.
January	26.3	1.59	28.3	-----	August	75.7	3.76	75.9	3.78
February	28.8	1.82	27.5	2.02	September	68.1	3.41	68.1	3.41
March	41.4	2.48	40.6	3.00	October	57.0	2.97	56.5	2.21
April	55.9	3.07	54.7	3.43	November	42.4	2.08	41.8	1.98
May	65.7	4.23	64.8	4.94	December	32.2	1.94	30.6	1.91
June	73.6	4.82	72.8	4.32	Year	53.8	36.34	53.2	-----
July	78.3	4.17	76.9	4.24					

PHYSIOGRAPHY AND GEOLOGY.

The relief features of the county consist of two natural physiographic divisions—the lowlands or “bottoms” along the Missouri River and the prairie or uplands. The latter is by far the most important, both in size and agricultural interests, as on it are located some of the finest farms to be found in the State, if not in the whole country. It extends over the entire southern and central parts of the county, and also touches the river at several points on the north and east, notably at Miami, New Frankfort, Cambridge, Saline, and Arrowrock. This upland division consists of two parts—the prairie proper and the wooded areas—and the topography is generally that of a high, rolling, well-drained section. The general character of the prairie portion proper is nearly level to rolling with steep slopes to the streams.

A prominent exception to these rolling uplands is the Petesaw Plains in the northwestern part of the county, which have an elevation of about 750 feet and extend from west of Maltabend to Muddy Creek on the east, and north from Salt Fork Creek to the bluff separating them from the bottoms, which are about 50 feet lower.

The soils of these prairies are well watered and drained, except some few fields, where an impervious subsoil lies so near the surface that it prevents the meteoric waters from quickly passing below the point at which they are injurious to growing crops. Underdrainage for these areas would eliminate this difficulty.

The wooded areas are mostly in the southern part of the county and along some of the streams. The topography of this subdivision of the uplands is not so uniform as that of the prairies. Precipitous slopes and sometimes vertical cliffs occur, giving the country a rugged appearance. In many places erosion is quite pronounced, giving rise to rough topography. In some of these places glacial drift buried underneath the loess is exposed, the most marked examples of this erosion being along Salt Fork Creek, east of Marshall, and the rough country along the river bluffs.

The soils of this division are generally characterized by heavier subsoils. In many places the bed rock comes to the surface in gullies and on slopes, adding to the general irregularity of the surface.

The topography of the river lowlands or bottoms, as they are called, is that of a nearly level plain, extending from the bluff to the river bank. As a rule these bottoms are lower at the bluff than near the river, and sometimes the surface is broken by a low swell or a depression, marking an old water course. The sandy areas are usually distinguished from the heavier ones by a slightly irregular surface. There are five separate bodies of these bottoms, the most important one, which is larger than the other four combined, being

in Grand Pass Township, in the northwestern part of the county. In this bottom there are several low swampy places, old lake beds, which have been partially drained by cutting channels from them to the river. They undoubtedly are remnants of old river channels abandoned many years ago. These bottoms are about 12 to 15 feet above the ordinary level of the river and are subject to occasional overflow. The soils are liable to change with each overflow, according as sandy or heavy material is deposited.

The river is constantly changing its course, building up land here and washing it away there, a notable instance being the undermining and washing away of Laynesville during the high waters of 1903.

There are three systems of drainage in the county. The largest stream is Blackwater River, which enters the county near the southwestern corner and flows, in a tortuous course, in an easterly direction. It receives numerous tributaries, the largest of which, in the southern part of the area, are Davis and Finniss creeks. It drains the entire southern part of the county and passes into Cooper County, near Nelson. Salt Fork Creek, a still larger tributary, is the most important stream, draining, as it does, the large part of the county. It rises in Lafayette County and enters Saline County in Grand Pass Township, then flows easterly to the vicinity of Blosser, where it takes a southeasterly course and joins Blackwater River just above Nelson. Its main tributaries are Pass and Salt branches and Straddle Creek from the south, and Muddy, Cow, Rock, and Camp creeks from the northeast. The bottoms are drained by the small streams which empty into the river, the largest of which are Edmonson, Bear, and Fish creeks. Flat Creek, another small stream, having its source west of Saline, flows south and east into Cooper County.

Lying as it does near the southern limit of glacial action, the surface features of the county are both glaciated and unglaciated. The geology of this part of the State has never been thoroughly worked out, but from an agricultural standpoint it is important in that some of the soils are residual in origin and depend upon the nature of the rocks from which they are derived. The whole basal structure belongs to the Paleozoic age of geological time. An irregular shaped area in the western part of the county and also some smaller irregular areas northeast of Salt Fork are underlain by siliceous limestones and sandstones of the Lower Carboniferous period. The remainder of the county, except two small areas, belongs to the Coal Measures. The two exceptions just mentioned are limestones belonging to the Devonian period, one of them occurring along Blackwater River in the southeastern part of the county, and the other just north of Saline. All of these formations furnish building stone and an excellent road metal. In the Coal Measures are numerous thin

seams of bituminous coal, which are worked in a desultory manner, furnishing a cheap fuel for local use. They are too thin to work on a commercial scale. In the southeastern part of the county there are pockets of cannel coal said to be of an excellent quality.

In the southern part of the county are quite extensive areas which have not been modified by the deposition of glacial material. The Quaternary period is represented by the glacial material and the more recent deposits of alluvium, as represented in the river bottoms and along some of the streams. A large portion of the county is covered up by a mixture of sand, silt, and clay of varying depths, termed "loess" by geologists. This loess is supposed to be wind-blown material deposited in shallow water about the close of the Glacial period. In the vicinity of Marshall there is distinct evidence of glacial drift underneath this loess.

SOILS.

The soils of Saline County, according to their physiographic features, fall into two natural divisions, the bottom soils and the upland soils. Considering their derivation the upland soils are divided into glacial or loessial and residual soils. These relations are shown in the following table:

Soils of Saline County	Bottom (Alluvial)		Yazoo clay.
			Yazoo loam.
			Clarksville loam.
Upland	Loessial		Meadow.
			Marshall silt loam.
Residual	Miami silt loam.		Miami silt loam.
			Clarksville silt loam.
			Clarksville stony loam.

As seen in this table eight types of soil, including Meadow, were recognized in the county. The following table gives the actual and the relative area of each of these types:

Area of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Marshall silt loam.....	306,816	64.6	Clarksville stony loam	7,296	1.4
Clarksville silt loam.....	67,520	14.1	Clarksville loam	5,440	1.1
Miami silt loam.....	43,776	9.2	Meadow.....	3,584	.7
Yazoo clay.....	28,544	5.9	Total	478,656	-----
Yazoo loam	15,680	3.0			

MARSHALL SILT LOAM.

To a depth of 15 to 20 inches the soil of the Marshall silt loam is a black, or, less frequently, a dark-brown, mellow silt loam. When

the soil is moist the black color is striking, but when dry the color changes to an ashy gray. The subsoil is usually a heavy silt loam, brown or brownish black in color, sometimes becoming mottled with brown, yellow, gray, and black at from 24 to 30 inches below the surface. The deep subsoil is much lighter in color, being usually a gray silty clay. One phase of this soil has an impervious subsoil occurring near enough to the surface to make local areas wet. These areas are known as "hardpan" soils by the farmers of the county. Another phase occurs along some of the streams and in hollows, where the soil is much deeper, having been added to by washings from the neighboring slopes.

The Marshall silt loam is by far the most extensive soil type in the county, covering about 65 per cent of the total area. It occurs in an extensive body over the entire central portion of the county, except where broken by relatively small areas of Miami silt loam, Yazoo clay, and Meadow, mainly along Salt Fork Creek. The large area extends to the Cooper County boundary on the southeast, to the rough, broken country on the east and north, and borders Lafayette County from 4 miles south of Blackburn northward to the bluffs which separate it from the river bottoms. Several smaller isolated areas occur in the southern part of the county, the largest being in the vicinity of Sweetsprings.

The topography of the type as a whole is gently rolling. Along some of the streams it becomes quite hilly, and on the other hand there are areas nearly level or only slightly undulating. Some of the hilly portions have a thinner soil, and the more level areas a much deeper soil than does the general type. It is usually these thinner soils that have the brown color, indicating a less amount of organic matter. The most notable of these level areas is the Petesaw Plains, in Grand Pass Township. These plains, although nearly level, are pretty well drained, a few open and tile drains being maintained. An extension of these tile drains would insure more satisfactory crops for some fields in wet seasons.

The high, rolling portion of the Marshall silt loam is well supplied with small streams, which serve to carry off quickly any excess of surface water. Though well drained, the texture of this soil is such that the soil moisture is conserved and crops do not suffer except in case of long-continued drought. As stated elsewhere in this report, the hardpan areas would be greatly benefited by the installation of tile underdrainage.

The wide distribution and uniformity of the Marshall silt loam as it is found in this county is explained by the consideration of its origin and process of formation. The material of which it is composed is a mixture of sands, silt, and clay known as loess. Many

theories have been advanced explaining the method of deposition of this mantle of loess. Some attribute its presence to æolian agencies alone, while others are equally certain that it is both æolian and aqueous—that is, a wind-blown material deposited in a shallow inland sea, which they suppose was formed by the melting of the ice at the close of the Glacial epoch. The latter theory is probably the most acceptable, as some of the characteristics of the deposit can not be satisfactorily explained otherwise. Disregarding the theories of origin and deposition, none can dispute the natural productiveness of the soils derived from it, and the Marshall silt loam is no exception, unless we say exceptionally productive. The black color of the soil is due to the accumulation of organic matter, which aids in securing a good tilth and helps to conserve the soil moisture for the growing crops.

As one would expect of a rich soil like this, the yields of corn, wheat, and hay—the money-making crops—are large, and fruits, garden vegetables, etc., for home use are plentiful. Indian corn, the chief product of the county, is extensively planted on this soil and yields from 30 to 100 bushels of shelled corn to the acre, the average probably being about 45 bushels. In 1875 a prize of \$200 was offered for the best 10 acres of corn raised in the county that season. About 20 pieces were planted to compete for this prize, each of which yielded more than 100 bushels per acre. The prize 10 acres was grown on the Marshall silt loam, where a part of the village of Malta-bend now stands, yielding a few pounds more than 124 bushels per acre. Wheat yields from 12 to 25 bushels, averaging about 18 bushels. Some yields of wheat as high as 40 to 45 bushels have been secured, but these large yields were not common even on the soils before they had been continuously cropped. One great difficulty encountered in growing vegetables and garden truck is the rapid and abundant growth of weeds. It requires much care and labor to keep these troublesome plants from choking out and killing the crops. However, when careful and frequent cultivation is practiced large crops are produced. Some fruits for home consumption are grown. Numerous apple orchards are located on this soil, but none of any great size. The trees grow very rapidly and are not generally well shaped. The extension of these orchards can not be recommended, as the trees grow very rapidly and reach maturity so soon that they are not very long lived and do not bear so well as orchards planted on less productive soils.

On nearly every farm the stock are supplied with water from ponds, made by constructing a dam across some small ravine, which holds either the surface water or water from some near-by spring.

The following table shows the results of mechanical analyses of typical samples of the Marshall silt loam:

Mechanical analyses of Marshall silt loam.

No.	Locality.	Description.	Fine gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0 mm.
			P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
12358	2 miles W. of Marshall.	Black silty loam, 0 to 15 inches.	0.1	0.6	0.4	1.9	7.6	71.0	17.8
12356	1½ miles E. of Malta-bend.	Black silty loam, 0 to 16 inches.	.1	.4	.2	.6	8.8	71.9	18.1
12360	1 mile S. of Slater.	Black silty loam, 0 to 15 inches.	.1	.3	.2	.9	10.1	69.2	19.1
12357	Subsoil of 12356	Heavy silty loam, 16 to 36 inches.	.1	.3	.3	1.2	9.0	70.5	18.5
12359	Subsoil of 12358	Heavy silty loam, 15 to 36 inches.	.1	1.2	.8	1.3	11.6	63.2	21.7
12361	Subsoil of 12360	Brown silty loam, 15 to 36 inches.	.0	.4	.3	1.2	6.5	69.7	21.9

YAZOO CLAY.

The Yazoo clay is a bottom soil and is known locally as "gumbo." The surface soil, from 10 to 15 inches in depth, is a heavy silty clay loam or clay, black or dark brown in color. The subsoil has very much the same texture as the soil, but is more compact and plastic. It is usually a little lighter in color than the soil, but sometimes it is mottled gray, brown, and yellow or a light drab. The surface upon drying cracks open, but does not dry out to any great depth. When wet the soil is very sticky and exceedingly difficult to till. If plowed and worked at the right time a good tilth can be secured, but if care is not taken to plow when the conditions are very favorable it breaks up into great clods, which interfere greatly with subsequent cultivation.

North of Grand Pass occurs a phase of the Yazoo clay that has a sandy subsoil at depths varying from 12 to 24 inches. This light subsoil is usually far enough below the surface not to have any marked influence on the surface conditions. Sometimes both soil and subsoil are modified with sandy material, but these areas are of no great extent. Much of this type in the river bottoms is heavier and more plastic than that found along the smaller streams in the interior of the county. The most extensive areas of the Yazoo clay are found in Miami and Grand Pass townships, also in the bottom above Saline. Other bodies of it occur along Salt Fork Creek and some of its tribu-

taries, along Davis Creek, near Sweetsprings, and along Blackwater River.

The physiographic position of the Yazoo clay is most unfavorable for drainage. Lying as it does in the flood plain of the river or smaller streams, it is nearly level and subject to frequent overflow. The areas in the river bottoms, although probably not inundated as often, are sometimes entirely changed by the deposition of sandy material. The drainage of this type is very deficient. There is practically no underdrainage, owing to the compact, impervious structure of the soil and subsoil. Open ditches seem to be the only feasible method of draining this soil.

The washings from higher levels and deposition of material carried in suspension in quiet waters accounts for the formation of the Yazoo clay. As only silt and clay are held in suspension where the motion of water is slow, this explains why 95 per cent of the material of which it is composed is of the finer grades.

In Grand Pass and Miami townships in the river bottoms there are remnants of old lakes, which were probably formed by the river leaving its old channel. These areas are covered by shallow water, and around the edges reeds and other water-loving grasses grow luxuriantly. Until a few years ago, when they were partially drained by cutting channels from them to the river, these lakes were very much more extensive than they are now. Since these channels have been cut fine crops of corn and wheat have been grown in favorable seasons.

The drainage of these areas is entirely feasible, and the ditches already cut should be deepened and extended and new ones opened in a few places. An effort was made to have a channel opened along the bluff to receive the water from the springs which occur at the base of the bluff, as well as the surface water which collects on the lower land next to the bluffs, but some of the property owners prevented its being carried out. Such a ditch as this would aid in the drainage of these swamps, as well as benefit all of the land lying along the bluffs. The partial drainage of the old lake beds of the bottoms has already added to the extent of the Yazoo clay, and the further reclamation of these areas will increase it still more.

Dense forests of cottonwood, sycamore, and elm once covered the higher parts of the type, but practically all the timber has been removed and nearly all the area except the lower wet portions has been brought under cultivation. Corn and wheat are the principal crops grown, and in favorable seasons especially large yields are obtained. Wheat seems to do much better on this heavy soil than on the lighter upland soils. Owing to the liability of overflow and consequent uncertainty of obtaining a crop every season, together

with the difficulty of cultivation, these lands are not as desirable as the upland soils, and therefore bring much lower prices. In favorable seasons corn yields from 35 to 50 bushels and wheat from 15 to 30 bushels per acre.

The following table shows the results of mechanical analyses of both soil and subsoil of this type:

Mechanical analyses of Yazoo clay.

No.	Locality.	Description.	Fine gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0 mm.
			P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
11879	9 miles S. of Marshall	Black clay loam, 0 to 12 inches.	0.4	0.9	0.4	2.4	1.2	62.5	52.1
11881	2 miles NW. of Mal- tabend.	Black clay, 0 to 12 inches.	.0	.4	.7	3.0	4.2	49.6	42.1
11880	Subsoil of 11879 -----	Black clay loam, 12 to 36 inches.	Tr.	.6	.4	1.4	.4	68.1	29.3
11882	Subsoil of 11881 -----	Brown clay loam, 12 to 36 inches.	.0	.1	.3	5.1	11.8	50.9	31.3

YAZOO LOAM.

The Yazoo loam consists of from 10 to 14 inches of a dark-brown or gray fine sandy loam or loam, underlain by a gray or brown fine to very fine sand, both soil and subsoil containing a high percentage of silt. The subsoil grows lighter with increase in depth. In many small areas the subsoil is a light sandy loam, and in other places both soil and subsoil are made up of alternate layers of sand, sandy loam, and heavy material. These materials, however, are not arranged in any regular order. A light phase of this type occurs on Whites Island and the mainland lying next to it. Here the loam soil covering is absent and the soil becomes a light gray fine sand 3 feet or more in depth. A lighter phase is also found on the bottom above Arrowrock.

The Yazoo loam is strictly a lowland type and is found in the bottoms along the Missouri River, the largest areas being the bottoms above Arrowrock and in the vicinity of Whites Island. It occurs generally at slightly higher levels than the Yazoo clay, which is associated with it, and consequently has better drainage. Although the surface is not level, the general topography is that of a level plain. The light porous character of the subsoil gives adequate drainage by seepage and none of the water is removed by streams.

Droughts have a more marked effect on crops growing on this type than on those growing on the Yazoo clay.

Like the other bottom soils, the Yazoo loam is subject to inundation by the overflow of the river, and to this fact its origin is due. When the river is high and the bottoms are covered with water, naturally there are swifter currents in some places than in others, and where these swift currents exist sand is deposited, the finer materials, silt and clay, being carried along in suspension and dropped in quieter water, forming the Yazoo clay. As the floods subside and the water moves less rapidly, some of the finer sediments are dropped with the sand, resulting in the loam covering overlying the sand.

Corn and wheat are the principal crops grown on this soil, but the yields do not equal those obtained on the heavier bottom type, the Yazoo clay. The yields are uncertain, as floods sometimes destroy or damage the crops. Melons have been grown on this soil with excellent results, but at present none are grown. In favorable seasons this would make an ideal soil for the production of both muskmelons and watermelons, and if the industry were once established on a firm basis, would, together with the production of other truck crops, prove much more profitable than the growing of corn and wheat.

The following table gives the results of mechanical analyses of typical samples of this soil:

Mechanical analyses of Yazoo loam.

No.	Locality.	Description.	Fine gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.06 mm.	Silt, 0.06 to 0.005 mm.	Clay, 0.005 to 0 mm.
12352	6 miles NE. of Maltabend.	Silty loam, 0 to 12 inches.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
			0 0	0.3	0.3	3.7	16.5	69.3	9.6
12350	4½ miles NE. of Miami.	Loam, 0 to 12 inches1	.3	.6	16.6	19.9	49.7	12.5
12353	Subsoil of 12352	Silt and very fine sand, 12 to 36 inches.	0	.1	.2	2.3	13.9	78.3	5.0
12351	Subsoil of 12350	Gray fine sandy loam, 12 to 36 inches.	0	.3	.3	45.3	17.2	30.8	6.1

MIAMI SILT LOAM.

The Miami silt loam is distinguished from the Marshall silt loam chiefly by its color and topography, rather than by any wide variation in texture or derivation. The surface soil, ranging from 6 to

10 inches in depth, consists of a light-brown or gray silt loam. When dry it is rather loose and incoherent, but when wet it becomes sticky and plastic. The subsoil is a heavy silt loam. Its color is a deep brown, and its structure gives it the appearance of a heavy clay. If dry, this subsoil breaks up into angular blocks about an eighth of an inch across. This structure is only seen in the areas in the eastern parts of the county. Like the soil, this subsoil is sticky and plastic when wet.

The widest extent of the Miami silt loam is found in Clay and Cambridge townships. There is a strip of this soil extending along the bluffs from the Cooper County line to a point about 5 miles southwest of Miami. Through Miami Township this strip is narrow, but just before passing into Cambridge Township it suddenly widens out to a width of about 2 miles and gradually widens to about $3\frac{1}{2}$ miles just before reaching the Chicago and Alton Railroad tracks. Beyond this point it abruptly narrows to about one-half mile, becoming still narrower as it passes southward past Saline and Arrowrock. Along the bluffs in Grand Pass Township it is not very extensively developed, but occurs as a narrow strip widening out at and west of Grand Pass. Isolated areas occur in the Marshall silt loam along Rock and Salt Fork creeks east of Marshall and also on Cow Creek and Thrailkill Branch.

The physiographic features of the Miami silt loam are very striking and in sharp contrast to those of the Marshall silt loam. The surface is extremely rolling and hilly. Deep ravines have been cut by the streams, and in many places the bed rock has been exposed, although nowhere are the exposures of sufficient size to be shown on the soil map. A phase having a heavier subsoil occurs on some of these hillsides, due to residual material. Wet areas are rarely found, as the rough topography usually favors good natural drainage.

Like the Marshall silt loam, it is a loess deposit and has developed from the prairie by the processes of erosion. That part of the Miami silt loam lying east of Marshall is interesting from the fact that here the erosive agencies have exposed in many places the glacial drift, which consists of pockets of cherty gravel, sands, clay, etc. In some of these exposures there are small stones unlike any of the rocks of this region. This is conclusive evidence of the existence of a stratum of glacial material underneath the loess over at least a portion of the county.

Nearly all of this soil was originally forested, but the more level areas have been cleared and cultivated. Most of the rougher parts are still covered with trees, mostly scrub oak, little merchantable timber being left.

Several large young apple orchards have been set out on the Miami

silt loam and are making a very satisfactory growth. The trees grow less rapidly and to better shape on this soil than on the black prairie. The yields from orchards on this type should be more certain, owing to the increased hardiness of the trees. At Waverly, a few miles over in Lafayette County, there are extensive orchards on a similar soil, which are said to be very successful.

The principal crops grown on the Miami silt loam are the two staples, corn and wheat, and grass. Owing to its broken character, the fields cultivated are not so extensive as on the Marshall silt loam, and as a rule the yields are not so large. The average yield of corn is about 30 or 35 bushels and of wheat 12 to 14 bushels an acre.

The application of barnyard manure and the plowing under of the rotted straw seen in piles where thrashed would add organic matter to the soil, improve its structure, and also prevent to some extent its washing.

The following table shows the results of mechanical analyses of both the soil and subsoil of this type:

Mechanical analyses of Miami silt loam.

No.	Locality.	Description.	Fine gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0 mm.
			P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
12346	1 mile W. of Cambridge.	Light-brown silty loam, 0 to 8 inches.	0.1	0.5	0.6	1.6	15.4	71.6	10.0
12348	2 miles E. of Marshall.	Light-brown silty loam, 0 to 8 inches.	.0	.1	.4	1.0	7.2	55.7	35.4
12347	Subsoil of 12346 -----	Light-brown silty loam, 8 to 36 inches.	.0	.5	.4	1.8	8.6	69.8	18.6
12349	Subsoil of 12348 -----	Heavy silty loam, 8 to 36 inches.	.0	.1	.2	1.9	6.7	66.6	24.4

CLARKSVILLE SILT LOAM.

The surface of the Clarksville silt loam, ranging in depth from 6 to 10 inches, is usually a yellowish-brown silty loam, although in some places the soil is an ashy-gray color, due to the incorporation of small amounts of organic matter. The subsoil, to a depth of 20 to 24 inches, consists of a yellow or light-brown heavy silt loam, below which there occurs a heavy red or yellow clay.

All of the Clarksville silt loam mapped in the area is found in the southern part of the county, in Salt Pond, Liberty, Salt Fork, Blackwater, and the southern part of Elmwood townships, and in two

irregular shaped areas in Arrowrock Township, north of the village of Nelson.

The surface features of this type are quite rough and broken, although some rather extensive areas of gently rolling country are included within its boundaries. Certain portions of the type have been badly cut up by erosion and are extremely rough. On these eroded areas there is scarcely any soil covering, and they, as well as other rough areas, are not cultivated, being covered for the most part by a dense growth of scrub oaks. Its location along Blackwater Creek and important tributaries gives it excellent natural drainage, save only in a few places, where artificial drainage is feasible. Some of the surface soil is rather loose and does not well retain the moisture necessary for growing crops. The incorporation of organic matter by applying stable manure and by turning under the straw now allowed to rot in piles would remedy this trouble to some extent and also increase the productiveness of the soil. The heavy character of the subsoil aids in the conservation of moisture and in a measure compensates for the looseness of the surface soil.

The origin of the Clarksville silt loam in this area can be attributed to two widely different processes—glacial action and the disintegration of rocks in place. The surface soil of the greater part of the type is undoubtedly composed of or modified by the loess deposits spoken of elsewhere in this report, while the subsoil in most places is distinctly residual in character. The bed rock outcrops in many places, though the areas are too small to be shown on a map of the scale used. Saline County lies near the southern limit of glacial action, and the loess covering, not being very thick, has been partially removed by erosion; therefore the soils of the southern portion of the county are liable to be made up of the residual products of the disintegration of the underlying rocks, modified at the surface by the loess still remaining.

Apple orchards have been set out on this soil and are coming into bearing. This industry can be extended on the Clarksville silt loam probably with as much, if not more, profit than can be realized from the same crop on the Marshall silt loam. The trees grow less rapidly, are more hardy, and of better shape on this soil, and if properly cared for should produce equally as well or better. This soil type, however, is not so well adapted to wheat and corn as the Marshall silt loam, and sells at a much lower price. Corn will probably average about 25 bushels and wheat from 8 to 10 bushels per acre. In the southwestern part of the county, around Sweetsprings, much of the Clarksville silt loam is used for dairy farming.

The Clarksville silt loam is capable of considerable improvement, and should be carefully farmed in order to obtain the best results.

The following table gives the results of mechanical analyses of both soil and subsoil of this type:

Mechanical analyses of Clarksville silt loam.

No.	Locality.	Description.	Fine gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0 mm.
			P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
12340	1½ miles SE. of Ridge Prairie.	Brown silty loam, 0 to 8 inches.	0.0	0.3	0.4	1.9	9.9	74.2	13.3
12342	5 miles NE. of Sweet-springs.	Yellow silty loam, 0 to 10 inches.	.0	.1	.4	1.4	5.1	79.6	13.7
12341	Subsoil of 12340 -----	Yellow silty loam, 8 to 36 inches.	.1	.3	.4	1.5	4.8	72.4	20.4
12343	Subsoil of 12342 -----	Brown silty clay, 10 to 36 inches.	.0	.3	.3	.7	2.7	66.4	29.6

CLARKSVILLE STONY LOAM.

Unlike all the other soils of the county, the Clarksville stony loam is recognized by its rough stony nature. It is associated with the Clarksville silt loam and sometimes contains small areas of that soil.

The soil is a brown or yellow silt loam from 6 to 8 inches deep. The subsoil is usually a heavy red or yellow residual silty clay. Both soil and subsoil are more or less filled with angular fragments of chert and limestone. Sometimes the bed rock, strewn with loose fragments, appears at or near the surface.

The Clarksville stony loam is found in the southern part of the county where the loess mantle has been removed. It occurs in small irregular-shaped areas generally surrounded by the Clarksville silt loam. The topographic features are varied, but almost always consist of rough, steep slopes. Good natural drainage exists wherever this type occurs. Wherever the loess mantle has been removed, the materials giving rise to this soil are exposed. It is almost entirely residual in origin, being formed from the siliceous limestone on which it rests.

Very little of the Clarksville stony loam has been brought under cultivation. The native timber growth consists of oak, hickory, and other hardwoods, and although the wooded areas have long since been nearly stripped of merchantable timber, they furnish a considerable quantity of firewood and fence posts, with some little lumber for building purposes.

Where not too steep and rough this soil should prove valuable for the production of apples and other fruits. In the southern part of

the State some of the largest apple orchards in the world are located on a soil of the same general description as this one.^a The rougher stonier areas should be reforested so as to supply the increasing demand for firewood and fence posts.

The following table shows the results of mechanical analyses of the fine earth of this type of soil:

Mechanical analyses of Clarksville stony loam.

No.	Locality.	Description.	Fine gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0 mm.
12344	4 miles NE. of Wana-maker.	Brown silty loam, 0 to 7 inches.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
12345	Subsoil of 12344	Red silty clay, 7 to 36 inches.	.4	.7	1.2	3.5	4.7	59.5	29.8

CLARKSVILLE LOAM.

The surface soil of the Clarksville loam consists of a gray or light-brown silty loam with a depth of about 12 inches. The subsoil is usually a brown silty loam slightly heavier than the soil. The soil is quite variable, sometimes becoming almost a sandy loam. It is found principally in Salt Pond Township along branches of Davis Creek and in Liberty Township along Blackwater River and Finnis Creek. It occupies nearly a level position in the narrow bottoms of these streams, and some of it is subject to overflow and often remains wet for some time after the waters subside. The Clarksville loam is an alluvial deposit, and is made up of the wash from the neighboring hillsides.

In favorable seasons this type produces good crops of corn, but at present little of it is under cultivation. It is generally in pasture and some areas are timbered, the forests furnishing firewood and fence posts, and occasionally a little lumber.

^a See Soil Survey of Howell County, Mo., Field Operations of the Bureau of Soils, 1902, pp. 599 to 603, inclusive.

The following table gives the results of mechanical analyses of this type of soil:

Mechanical analyses of Clarksville loam.

No.	Locality.	Description.	Fine gravel, 2 to 1 mm.	Coarse sand, 1 to 0.5 mm.	Medium sand, 0.5 to 0.25 mm.	Fine sand, 0.25 to 0.1 mm.	Very fine sand, 0.1 to 0.05 mm.	Silt, 0.05 to 0.005 mm.	Clay, 0.005 to 0 mm.
			P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
12338	4 miles NE. of Sweet-springs.	Yellow silty loam, 0 to 12 inches.	0.1	0.3	0.5	2.3	10.8	70.0	15.9
12339	Subsoil of 12338 -----	Brown loam, 12 to 36 inches.	.0	.7	.4	1.3	9.9	67.1	20.4

MEADOW.

The Meadow mapped in this area consists of a narrow strip of low, poorly drained land extending along Salt Fork Creek from the Lafayette County boundary to the mouth of Cow Creek. The fall of the creek in this distance, about 18 miles in a straight line, is less than 50 feet, and its course is so crooked that high water is not readily removed and the level land on each side is inundated.

The soil of this narrow strip varies from a heavy silt loam to a clay loam. Very little attempt is made to cultivate it, as crops are liable to be either wholly or partially destroyed by high water. The most of it is covered with a growth of soft maple, elm, oak, hickory, and honey locust.

If the course of the creek were straightened, the surplus waters would pass off much more rapidly and the greater part of these lands, it is believed, could be brought under cultivation. In Grand Pass Township some of the farmers owning land along the creek have straightened portions of the channel and diked low places to keep the waters from spreading out. These efforts have, it seems, been rewarded with success.

AGRICULTURAL METHODS.

The system of farming practiced in Saline County is for the most part typical of a rich corn-growing and stock-feeding section. It has been the custom on a large number of farms to grow corn year after year on the same fields, but at present more attention is being given to a rotation and more thorough tillage of crops. This change in methods seems to be due to the increased price of land and in a less degree to a slight decrease in the productiveness of exceedingly productive soils. The principal rotation is to alternate corn with wheat.

Corn is grown for two or three and sometimes four seasons in succession, followed by one or two crops of wheat. Oats are sometimes sown after corn instead of wheat, but the acreage in this crop is only about one-fourth that in wheat, and the acreage in wheat is slightly less than one-fourth that devoted to corn. The production of oats has decreased greatly, but wheat continues to be one of the leading crops of the county, not only on account of the direct profit derived from it, but also because it gives the soil a much-needed rest from corn and furnishes a nurse crop with which to seed clover. Although it has been the rule to follow wheat with corn, some of the better farmers who keep large numbers of cattle now sow clover or timothy and clover with the wheat. A few omit wheat from the rotation and seed clover with the corn. The land usually remains in grass for two years or more before being broken again for corn, and is used for grazing each season after the first crop has been removed for hay. Permanent bluegrass pastures, often mixed with white clover, which is self-sown, are numerous, but occupy only a limited area on some farms.

When preparing ground in corn the preceding year for the next corn crop it is customary to employ the more rapid method of listing it instead of plowing it level. The lister throws a furrow to each side and leaves the surface of the field a succession of low ridges and shallow hollows. The seed is planted in the bottom of these hollows and the first cultivation is done with a smoothing harrow, which levels the ridges and draws soil around the young corn plants. When wheat follows corn the usual method is to loosen the surface of the ground with a disk harrow and drill the seed in among the corn stubble, but when corn follows wheat the surface is broken with a turning plow.

Some of the more thorough farmers plow the whole surface of the fields to a depth of about 6 inches, then pulverize it well before planting, and practice shallow, level cultivation. This method is to be highly recommended, as it tends to conserve the soil moisture and rewards the farmer with increased yields. An occasional deeper plowing and more thorough, careful tillage than is at present practice is also to be recommended.

Only a small part of the corn crop is cut and shocked for curing. By far the larger portion of it is either husked or "snapped" without being husked, the stalks being left standing in the field. The young stock are turned into the fields and browse on these standing stalks during the winter.

Most of the hogs raised at present are Poland Chinas. A considerable number of Duroc Jerseys are also raised, as well as some Berkshires. Probably less than one-tenth of the cattle fed are raised in the county. The majority of them are bought in Kansas City,

having been raised on the ranches farther west, and a considerable number come from the Ozark region, in the southern part of the State. They are mostly well-bred Shorthorns, although many Herefords and Polled Angus are also seen.

In the extreme southwestern corner of the county dairying takes the place of cattle feeding to some extent, and on many farms it is the principal source of income. Two creameries are kept in operation—one at Sweetsprings and the other at Emma, on the county line west of Sweetsprings.

The dairy farmers save the manure on their farms and apply it to the land. This practice, together with the feeding of large numbers of live stock in all parts of the county, is aiding greatly in maintaining the productiveness of the soils, which are very generally subjected to an exhaustive system of cropping. Commercial fertilizers are not used to any appreciable extent. The annual expenditure for this purpose, according to the census of 1900, is only \$14,050, which is less than 3 cents' worth to each acre of land in the county.

The most improved machinery suitable to the various farm operations is in use by nearly all of the farmers. A relatively small number take excellent care of these implements, but the majority either leave them in the field where they were last used or pull them up near the farm buildings and allow them to stand there unprotected until they are needed the following season.

AGRICULTURAL CONDITIONS.

Nearly the whole population of the county is engaged in agricultural pursuits, and appearances indicate a degree of prosperity probably not exceeded in any other county of the State. A good school system, many churches, rural free delivery of mail, and the existence of a dozen newspapers evidence a spirit of progress and independence. The prosperous conditions, which in the main result from naturally productive soils, are further shown by the stability of nearly a score of banks. No manufacturing of any importance is carried on within the limits of the county; therefore the soil is the sole wealth-producing power.

The crops raised do not require any great expenditure for farm buildings. The country homes are usually commodious, comfortable one-story houses. Not needing any extensive shelter to house their crops, a great many farmers have neglected to provide suitable shelter for their stock and make little or no attempt to protect them during cold weather. Better shelter for the stock and proper sheds for the expensive farm machinery in use should be provided on nearly every farm in the county.

About one-half of the farms are operated by the owners. Many of these farmers are engaged in stock feeding, combined with the

growing of grain, while the farms worked by tenants are used almost exclusively for the production of grain crops. Probably the most common method of renting land is that of paying a stated price per acre, this price not often falling below \$5 an acre, and for choice corn land is often considerably more. A second method of renting is on shares, the renter giving from two-fifths to one-half of the harvested crop for the use of the land. Another method of operating, used to some extent, is to hire the crop grown, the owner paying from $7\frac{1}{2}$ cents to $12\frac{1}{2}$ cents per bushel of corn, or a stated price per acre.

About 90 per cent of the land of the county is in farms, of which only about 12 per cent is classed as unimproved. The number of farms is 3,638. There are many holdings of from 20 to 40 acres, and some exceedingly large ones, but the average size of the farms is 120.7 acres. The largest individual holding of real estate is 2,524 acres, but much of this is unimproved. Nearly all of the farms are well fenced. New wire fences of the most approved pattern are common, and are so built as to turn hogs as well as cattle. Osage orange hedges are seen in nearly every part of the county, but this kind of fence is not being extended. Many of the farmers are tearing it out and replacing it with wire. Very little of it is properly trimmed and cared for, and wire has to be used with much of it in order to turn stock. The importance of either improving and taking better care of these hedges, or doing away with them entirely, should be impressed upon every farmer, for when allowed to grow up in brush and briars, as is the case on some farms, a harbor is furnished for injurious insects, weeds, and animals, and valuable land is wasted.

Land values vary considerably. It is said that the highest priced agricultural land in the State is located on the Petesaw Plains, sales at \$100 an acre being quite common. Some farms on these plains are held at \$150 an acre, but at this price no buyers are found. The highest price yet realized for any land in this section is about \$125 an acre. The high, rolling prairie lying east and south of Petesaw Plains sells at from \$60 to \$80 an acre, and choice farms at even more. Prices in the rest of the county will probably range from \$35 to \$60, but no definite prices can be cited for land in the bottoms. In the past thirty or thirty-five years farm values have increased from 75 to 100 per cent. Farm land was never higher in price in the history of the county than it is now, and the tendency is toward still higher prices. This is remarkable in view of the fact that these lands have been almost continuously cropped during the upward trend of prices.

One of the unsatisfactory problems with which the farmer has to contend is the character and efficiency of available labor. Wages paid farm hands employed throughout the year vary from \$18 to \$25 per month, and from \$1 to \$1.50 per day for day hands. Labor

is both white and colored. The use of improved and labor-saving machinery has made possible the planting and handling of a much larger acreage than was formerly done and has partially solved the labor question.

The range of crops grown in Saline County is such that if the county were isolated from the rest of the country the people could still live without being in want of any of the necessities, nor for many of the so-called luxuries of life. Indian corn is the dominant crop, about 40 per cent of the area of the entire county being planted to this cereal. Wheat is second in importance, the acreage being about one-fourth as much as that of corn. Clover and grasses are next in importance, with an area of about half that of wheat. Other crops produced are oats, rye, millet, potatoes, sorghum, fruits, and miscellaneous vegetables.

An idea of the extent of the stock feeding done in the county can be obtained when one considers that out of a crop of corn of 6,500,000 bushels raised in 1899 only about 5 per cent was shipped out of the county, whereas during the same season about 25,000 or 30,000 head of cattle were marketed which had been fattened in the county. Horses, swine, mules, and poultry also add greatly to the wealth of the county. In some seasons the production of corn is not sufficient to feed the stock kept, and the feeders have to look elsewhere for their supply. Only two other counties of the State exceed Saline in the value of live stock kept. The annual exportation of stock from the county amounts to more than \$1,500,000.

Agriculture in Saline County has not yet developed to the point where there is any special adaptation of crops to soils. The different crops grown are planted on all of the soils, with possibly one exception, the Clarksville stony loam, which is not improved to any extent.

The public highway system is very complete and reaches every part of the county. The roads are generally pretty well cared for. In many places erosion has made the maintenance of wooden bridges expensive, and this is being remedied by the building of permanent stone or concrete culverts. Many substantial iron bridges also have been built and more are being added each year. There are no macadamized roads, but such an improvement should be considered by the county officials, as there is an abundance of excellent material easily accessible for such purpose, except in the northwestern part of the county.

Two competing lines of railroad cross the county. The river route of the Missouri Pacific Railway from Jefferson City to Kansas City crosses from the southeastern corner to the northwestern, and the Lexington branch of the same system between Sedalia and Kansas City crosses the southwestern corner at Sweetsprings. The

Chicago and Alton Railway, running east and west, divides the county into two parts. For passenger service the latter excels, but for freight traffic, which is more important to the farmer and stockman, there is not much choice, one being as good as the other for Kansas City shipments. The Missouri Pacific offers a more direct route to St. Louis and the East by that point, while the most direct route to Chicago and the East by that point is over the Chicago and Alton.

The population of the county in 1900 was 33,703, of which about one-eighth was colored. Marshall, the county seat, with a population of 5,086, is the largest town. Slater, a divisional point of the Chicago and Alton Railway, is a town of about 2,500 inhabitants, and Sweetsprings, in the southwestern part of the county, has a population of about 1,000. Other towns having a population of about 500 are Maltabend, Miami, Blackburn, and Nelson. As before stated, the county is strictly agricultural, and therefore offers scarcely any home market for the farm products. Kansas City, St. Louis, and Chicago are all easily accessible by rail and are popular markets for the products of the county.

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